

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of

Date: October 20, 2008

Applicants: Bednorz et al.

Docket: YO987-074BZ

Serial No.: 08/479,810

Group Art Unit: 1751

Filed: June 7, 1995

Examiner: M. Kopec

For: NEW SUPERCONDUCTIVE COMPOUNDS HAVING HIGH TRANSITION  
TEMPERATURE, METHODS FOR THEIR USE AND PREPARATION

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**REPLY TO EXAMINER'S ANSWER**

**Dated 08/20/2008**

## **ARGUMENT**

### **1**

#### ***Initial Comments***

This appeal is from the final rejection in the Office Action dated 10/20/2005, referred to herein as the Final Action. The Final Action incorporates reasons for rejection from the Office Action dated 07/28/2004, which is referred to herein as the Office Action of 07/28/2004.

***Claim or Priority Under 35 U.S.C. 119***

In the Brief Applicants request the claim of priority under 35 U.S.C. 119 in paper submitted 04/27/1998 be granted. The Examiner denied Applicants' claim of priority. The Examiner did not respond to Applicants' arguments in support thereof in Applicants' responses of 08/02/1999, 03/01/2004, other responses and in the Brief. In the alternative in the Brief Applicants requested entry of a statement in the record that this issue does not have to be decided to resolve the issues in this appeal and Applicants requested the Examiner to withdraw the denial of priority leaving it as an issue not decided on. In paragraph 6 of page 4 of the Examiner's Answer the Examiner states:

Appellant's claim for priority under 35 U.S.C. 119 in this section of the Brief is noted. As stated by Appellant, no prior art rejection(s) are pending, and the priority date of the foreign application is not required to overcome any prior art rejection.

This is not a statement that the Examiner's denial of the claim of priority under 35 U.S.C. 119 is an issued that does not have to be decided to resolve this appeal and thus the denial of priority is withdrawn and left as an issue not decided on. Applicants request the Board to enter into the record that since the claim of priority is not needed to resolve the issues of this appeal, the denial of the claim of priority is withdrawn and left as an issue not decided on.

***Rejection For Lack of Enablement***  
***Means Plus Function Claims***

As stated in the Brief Volume 1 in Claims 438, 440 and 536 the “means for conducting a superconductive current” is in means plus function form. The Examiner has not rebutted this. The Examiner has allowed claims 113, 114, 123-125, 135-138, 140, 151, 157, 167-169, 172-174, 177-179, 185, 186, 189-191, 196, 197, 213-216, 220, 221, 224-226, 231, 258-260, 264, 265, 269, 270, 276, 277, 280-282, 287, 288, 296-301, 304-307, 311, 312, 315-317, 502-507 and 511-516 directed to specific embodiments recited in Applicants Specification. As stated in the Brief, in the Final Action the Examiner states (and restates in the last paragraph of page 5 of the Examiner’s Answer) these claims are allowed “because the specification, [is] enabling for compositions comprising a transition metal oxide containing at least a) an alkaline earth element or Group IIA element and b) a rare-earth element or Group IIIB element.” Thus since the Examiner has allowed claims to specific examples described in the specification, the claims in means plus function form cannot be rejected as not being enabled and the rejection should be reversed. It is Applicants’ view that the CAFC decision In re Donaldson 29 USPQ2d 1845 (1994) requires this result. In the Examiner’s Answer the Examiner has not commented on this nor rebutted this. Therefore, Applicants respectfully request the Board to reverse the rejection of claims 438, 440 and 536 as not being enabled under 35 USC 112, first paragraph. In view thereof Applicants request the Board to reverse the Examiner rejection of claims 438, 440 and 536 as not being enabled for the reasons given in In re Donaldson 29 USPQ2d 1845 (1994).

***Rejection For Lack of Enablement***

The Examiner's Answer is essentially verbatim copied from the Office Action dated 07/28/2004 and the Final Action. The Examiner's Answer from page 5, line 12 to page 20, line 6 is essentially copied from the Office Action of 07/28/2004. The Examiner's Answer from page 20, line 7 to page 29, line 11, is essentially copied from the Final Action. The Examiner has made no attempt to respond to the Argument presented by Applicants in the Brief. For this reason the Examiner's statement in the last two lines of the first page of the Examiner's Answer "[t]his is in response to the appeal brief filed 05/15/08 appealing from the Office action mailed 10/20/05" is essentially inaccurate. At page 7, lines 15-16 the Answer states "as stated in the Final Office Action." Since the Examiner copied this from the Office Action dated 07/28/2004, the Examiner here is not referring to the Final Action which is appealed. At page 8, lines 5, the Examiner refer to "Appellants' argument". In copying this language from the Office Action of 07/28/2004 the Examiner changed "remark" to "argument." At page 8, lines 9, the Examiner refer to "arguments by the applicants." In copying this language from the Office Action of 07/28/2004 the Examiner changed "remarks" to arguments. As noted above the Examiner's Answer has made no attempt to respond to the Argument presented by Applicants in the Brief. Thus Applicants will present here a summary of the argument presented in the Brief.

In the sentence bridging pages 11 to 12 of the Examiner's Answer the Examiner states "all of the claims in this application require the critical temperature ( $T_c$ ) to be "in excess of  $26^\circ\text{K}$ " or "greater than  $26^\circ\text{K}$ ". As noted in the Brief Applicant respectfully disagrees with the Examiner. All of the claims (except 543) require  $T_c$  to be greater that of equal to  $26^\circ\text{K}$ .

At page 12 of the Examiner's Answer, the first sentence of the last paragraph states "[t]he Applicants also have submitted three affidavits attesting to the applicants' status as the discoverers of materials that superconduct > 26°K." At page 15 of the Examiner's Answer, lines 14-15 states "3 affiants." As stated in the Brief in this passage the Examiner incorrectly states Applicants submitted three affidavits. Prior to the Office Action of 07/28/2004 Applicants submitted the five affidavits of Brief Attachments AH, AI, AJ, AK, AL of Mitzi, Dinger, Tsuei, Shaw and Duncombe, respectively. Subsequent to the Office Action of 07/28/2004 Applicants submitted the expanded affidavits of Shaw, Tsuei and Dinger of Brief Attachments AM, AN and AO, respectively. The expanded affidavits set forth particular facts to support the conclusions that all superconductors based on Applicants' work behave in the same way and that one skilled in the art can make those superconductors without undue experimentation. In the Answer the Examiner has not responded to these affidavits. In addition subsequent to the Office Action of 07/28/2004 Applicants submitted the Newns Affidavit (Brief Attachment AP) and declaration of co-inventor Georg Bednorz (Brief Attachment AQ). In the Answer the Examiner has not responded to the Newns Affidavit or the Bednorz declaration. The Examiner has not rebutted this evidence (including the other evidence submitted by Applicants) and thus has not made a prima facie case of lack of enablement.

The Board of Appeals has stated in *Issidorides et al. v. Ley et al.* 4 U.S.P.Q.2D (BNA) 1854 (1985) that is it:

has steadfastly followed the general rule that any party making the assertion that a U.S. patent specification or claims fails, for one reason or another, to comply with § 112 bears the burden of persuasion in showing said lack of compliance. See *In re Morehouse*, 545 F.2d 162, 192 USPQ 29 (CCPA 1976); *In re Ghiron*, 58 CCPA 1207, 442 F.2d 985, 169 USPQ 723 (1971); *In re Marzocchi*, 58 CCPA 1069, 439 F.2d 220, 169 USPQ 387 (1971); *In re Cook*, 58 CCPA 1049, 439 F.2d 730,

169 USPQ 298 (1971); In re Moore, 58 CCPA 1043, 439 F.2d 1232, 169 USPQ 236 (1971).

The Examiner bears the burden of persuasion in showing lack of compliance with the enablement requirement of 35 U.S.C. 112, first paragraph.

When a rejection is made for lack of enablement it is incumbent on the Examiner to advance acceptable reasoning or evidence which is inconsistent with enablement. That is, it is incumbent on the examiner to first establish a prima facie case of non-enablement. In re Armbruster, 512 F.2d 676, 185 USPQ 152 (CCPA 1975); In re Marzocchi, 439 F.2d 220, 169 USPQ 367 (CCPA 1971).

As stated in the brief in In re Armbruster the CCPA states:

As a matter of Patent Office practice, then, a specification disclosure which contains a teaching of the manner and process of making and using the invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented must be taken as in compliance with the enabling requirement of the first paragraph of § 112 unless there is reason to doubt the objective truth of the statements contained therein which must be relied on for enabling support. Assuming that sufficient reason for such doubt does exist, a rejection for failure to teach how to make and/or use will be proper on that basis; such a rejection can be overcome by suitable proofs indicating that the teaching contained in the specification is truly enabling. In re Armbruster, 512 F.2d 676, 677 (C.C.P.A. 1975) 185 U.S.P.Q. (BNA) 152

The Examiner has not made out a prima facie case of lack of enablement of the claims rejected under 35 USC 112, first paragraph, for lack of enablement, because the Examiner has given no “reason to doubt the objective truth of the statements contained [in applicants’ specification] which must be relied on for enabling support.” Notwithstanding, Applicants have submitted extensive evidence of enablement.

The Examiner has not made a prima facie case of lack of enablement. The Examiner has merely conclusory deemed the rejected claims not enabled. A number of Applicants' claims have been rejected under 35 USC 112, first paragraph, as not enabled by Applicants' specification. The Examiner has given these reasons in support of this rejection:

- 1) the Examiner's unsupported statements that the art of high  $T_c$  superconductivity is unpredictable;
- 2) the Examiner's statement that the theory of high  $T_c$  superconductivity is not well understood; and
- 3) the Examiner points to examples cited in Applicants' specification which do not show superconductivity greater than or equal to 26°K.

The Examiner has provided no support for reason 1. The only support the Examiner has provided for reason 2 is the article of Schuller et al "A Snapshot View of High Temperature Superconductivity 2002" (report from workshop on High Temperature Superconductivity held April 5-8, 2002 in San Diego) which as shown by Applicants actually supports Applicants' position that their rejected claims are enabled. Schuller clearly states that systematic searches guided by chemical and materials intuition using well-defined empirical strategies and searches in the oxides gave rise to many high  $T_c$  superconducting systems, that is, through routine experimentation. Schuller also states that similar searches based on  $MgB_2$  have been done, thereby being enabled, even though not finding as many high  $T_c$  species. The Examiner cited no authority to support the Examiner's view that a well developed theory is necessary to support enablement. Thus, reasons 1 and 2 are the Examiner's unsupported opinion. Applicants' examples that do not have a  $T_c$  greater than or equal to 26°K (Reason 3) do not support the Examiner's lack of enablement rejection in view of the decisions cited by Applicants, in particular, *In re Angstadt* 190 USPQ 219



(CCPA 1976), *Amgen v. Chugai Pharmaceutical Co.* 18 USPQ2d 1016 (Fed. Cir.) and *In re Wands* 8 USPQ2d 1400 (CAFC 1988). Applicants' claims do not include such materials. Applicant's claims include no inoperable species. Applicants have provided extensive evidence in support of their view that their claims are enabled: The Examiner has rebutted none of this evidence.

For example the following evidence was submitted:

1. the five initial affidavits of Tsuei, Dinger, Duncombe, Shaw and Mitzi (Brief Attachments AH to AL) and the three additional extensive DST AFFIDAVITS (Brief Attachments AM, AN and AO);
2. the books and articles cited in these affidavits;
3. Poole 1988 (Brief Attachment AW) that states that the reason so much work was done in such a short period of time after Applicants' first discovery was that the high  $T_c$  materials were easy to make using well known fabrication techniques (See the Pool 1988 Enablement Statement of Brief Volume 3);
4. the article of Rao et al. entitled "Synthesis of Cuprate Superconductors" (Brief Attachment AB) which cite numerous species of high  $T_c$  materials which can be made according to Applicants' teaching (See the Rao Enablement Statement of Brief Volume 3, page 9);
5. the CRC Handbook of Chemistry and Physics (Brief Attachment BL) which cites numerous species of high  $T_c$  materials which can be made according to Applicants' teaching (See the DST Affidavits Brief Attachments AM, AN and AO);

6. Poole 1995 (Brief Attachment W) which states that the high  $T_c$  materials are layered perovskites as Applicants states they were in their initial publication for which they received the 1987 Nobel Prize (See the Pool 1995 Enablement Statement of Brief Volume 3, page 7); and
7. Poole 1996 (Brief Attachment AG) which shows that the physical properties of the high  $T_c$  superconductors are consistent with the description in Applicants' specification. (See the Pool 1996 Enablement Statement of Brief Volume 3, page 7.)

In addition Applicants have cited the Examiner's First through Fourth Enablement Statements (See Brief Volume 3, pages 2- 6) and the Schuller Enablement Statement (See Brief Volume 3, pages 8-9.)

Many of the species in items 4 and 5 above, the Rao Article and the Handbook of Chemistry and Physics, respectively, (and in other submitted evidence) are not specifically recited in Applicants' specification, but they come within the genus of many of Applicants' claims that have been rejected as not enabled. Moreover, there is no evidence of record that a person of skill in the art cannot, without undue experimentation, make these species following Applicants' teaching. The Examiner has not denied that Applicants extensive proof shows that a person of skill in the art can fabricate these species following Applicants' teaching. Under *In re Angstadt* (supra) and *In re Wards* (supra) it is the Examiner's burden to establish that undue experimentation is needed to practice Applicants' claimed invention. The Examiner has made no attempt to satisfy this burden.

As stated, all of Applicants' claims except for one (claim 123) were initially rejected in the final rejection of the parent application as anticipated or

obvious over the Asahi Shinbum article under 35 USC 102 and 103. These rejections were found moot in view of the Examiner agreeing that Applicants effectively swore behind the date of this article. The Examiner has not withdrawn the 35 USC 102 and 103 rejections. Thus as alleged by Applicants from very early in the prosecution of this application, by these rejections, the Examiner has necessarily and unambiguously found all of Applicants' claims enabled. See the Examiners\'s Second Enablement Statement of Brief Volume 3, page 3. As stated, the Asahi Shinbum article [Brief Attachment AV] derives its enablement from Applicants' publication [Attachment AX] which was published less than a year before Applicants' earliest filing date and which is incorporated by reference in Applicants' specification. For a reference to anticipate a claimed invention the reference must enable from the teaching therein a person of skill in the art to practice the alleged anticipated claims and for a single reference to render obvious a claimed invention the single reference must enable a person of skill in the art to practice the alleged obvious claims from the teaching of that reference in combination with what is know to a person of skill in the art. Thus, all of Applicants' claims that were rejected under 35 USC 102 and 103 over the Asahi Shinbum article must be fully enabled by the Examiner's own rational. Moreover, the Examiner rejected Applicants' composition claims as inherent in the prior art. This means that persons of skill in the art knew how to make these materials. Thus all of Applicants' claims rejected as not enabled are in fact enabled since the non-obvious use of an enabled compound must be enabled. See the Examiner's Third Enablement Statement in Brief Volume 3, page 4.

It is Applicants' understanding of the Examiner's comments in the Final Action that the Examiner agrees "that once a person of skill in the art knows of a specific type of composition which is superconducting at greater than or equal to 26K, such a person of skill in the art, using the techniques described in the application, which included all principles of ceramic fabrication known at the time the application was initially filed, can make the known superconductive compositions." See the Examiner's First Enablement Statement in Brief Volume

3, page 2. Since the known methods disclosed by Applicants are used to fabricate species within the scope of Applicants' claims, it is Applicants' position that persons of skill in the art can determine those species without undue experimentation and consequently, Applicants have enabled their claims to their full scope. When species are determinable without undue experimentation, the art is a predictable art. Even though a high  $T_c$  material is a chemical composition, all aspects of chemistry are not unpredictable. That chemistry is not per se unpredictable is generally recognized by decisions of the Board and the Courts, for example at 427 F.2d 833, 839 the CCPA in *In re Fisher* states "In cases involving unpredictable factors such as most chemical reactions." Thus the CCPA recognized that all chemical reactions are not unpredictable. Applicants' evidence shows that the chemistry involved in formation of high  $T_c$  materials does not have to be understood to fabricate them which is one reason for why species are readily determinable. See for example the Poole 1988 Enablement Statement in Brief Volume 3, page 6. If the chemistry does not have to be understood to fabricate species, it is improper to refer to the art of high  $T_c$  super-conductivity as unpredictable. Applicants' claims are directed to an apparatus, device, structure, etc. using the high  $T_c$  material and not to a composition of matter.

Applicants discovered that ceramic materials are superconductors. Their work lead and leads others to look for other species. Applicants' evidence shows that those others used Applicants teaching to determine those species. Thus following *In re Fisher* "It is apparent that such an inventor should be allowed to dominate the future patentable inventions of others where those inventions were based in some way on his teachings." (166 USPQ 18, 24) (The CAFC referred to this statement as dictum in *Plant Genetic Sys. v. DeKalb Genetics Corp.*, 315 F.3d 1335, 1340 (Fed. Cir. 2003), 65 U.S.P.Q.2D (BNA) 1452.)

As stated in the Brief the claimed invention considered by the CCPA in *In re Cook* was directed to a four-member zoom lenses involving a complex set of design parameters. The CCPA in *In re Cook* 169 USPQ 298, 300 states:

It seems to have been agreed by all concerned that the design of commercially satisfactory zoom lenses of the kind involved here (i.e., four-member zoom lenses) is an extremely complex and time-consuming operation, even with the aid of modern computer techniques. Thus, quite apart from appellants' teachings, it would take a lens designer setting out to design a new zoom lens of this type many months, or even years, to come up with a marketable lens assembly possessing all the desired characteristics.

The CCPA held that the *In re Cook* claims could not be found not enabled merely because following the patent application's teaching it would take a person of skill in the art a long time to design other embodiments within the scope of the claims that were not specifically described in the specification.

The CCPA in *In re Cook* 169 USPQ 298, 302 states:

We agree that appellants' claims are not too broad "to the point of invalidity" just because they read on even a very large number of inoperative embodiments, since it seems to be conceded that a person skilled in the relevant art could determine which conceived but not-yet-fabricated embodiments would be inoperative with expenditure of no more effort than is normally required of a lens designer checking out a proposed set of parameters.

In *In re Cook* the CCPA held that even though the claims included inoperative species this did not render the claims not enabled since persons of skill in the art could determine "which conceived but not-yet-fabricated embodiments would be inoperative." That is a person of skill in the art could go through the time consuming and complex computation to determine whether a particular selected design within the scope of the claims functioned as a zoom lens. In *In re Cook* the CCPA found that the necessity of doing a complex time consuming calculation to determine whether a particular design was operable was not undue experimentation. This corresponds to the "theoretical experiment"

referred to in the Affidavit of Newns (Brief Attachment AP). In the present application by analogy once a particular composition having a high  $T_c$  is conceived following the CCPA rational in *In re Cook* “a person skilled in the relevant art could determine which conceived but not-yet-fabricated embodiments would be inoperative with expenditure of no more effort than is normally required of a [person of ordinary skill in the ceramic fabrication art] checking out a proposed [composition by fabricating and testing it.]” by the well known methods of fabrication that do not require an understanding of the underlying complex chemistry as stated by Poole 1988 (Brief Attachment AF and AW) quoted above. See the DST AFFIDAVITS (Brief Attachments AM, AN and AO.) Thus under *In re Cook* Applicants’ claims are enabled. Also, none of Applicants claims include inoperative species within their scope.

*In re Cook* some claims were found not enabled. This is the reason given by the court:

However, appellants' arguments do not reach the heart of the board's second rationale, which, as we understand it, is that appellants, having been challenged to do so by the examiner, failed to demonstrate that the ranges of parameters and parametric relationships recited in the claims reasonably bound the area within which satisfactory zoom lenses could be produced by ordinary design skill. The examiner in effect, and reasonably in our estimation, challenged appellants to prove that there were embodiments to be found, not only near the six specifically disclosed examples, but at various points throughout the broader claimed ranges, which would be operative. Appellants asserted that they had made "calculations which resulted in the definition of the ranges set forth in the specification," but they never produced those calculations to substantiate the truthfulness of the teaching in their specification which the examiner challenged. Section 112 requires not that the specifications merely say how to use the claimed invention, but that such teaching be true, i.e., in fact enabling. Appellants having failed to establish the truthfulness of their assertions about the validity of their ranges when reasonably challenged to do so by the examiner.

*In re Cook*, 58 C.C.P.A. 1049, 1056 (C.C.P.A. 1971)

Following *In re Cook*, to the extent that the Applicants can be properly viewed as having been challenged by the Examiner's reasons for rejection to demonstrate that the limitation recited in the claims reasonably bound the area within which satisfactory high  $T_c$  devices, apparatus, structures etc could be produced by ordinary design skill, Applicants have provided extensive documentary evidence of many species that come within the scope of Applicants' claims. Many of these species were made by persons other than Applicants. But, as show by Applicants' extensive documentary evidence and affidavits (in particular the DST Affidavits) those other species were made following Applicant's teaching. The Examiner has not rebutted this. Thus Applicants have shown that their claims are enabled. The Examiner in *In re Cook* requested confirmation that examples within the scope of the *In re Cook* claims other than those recited in the application could be found. The inventor in *In re Cook* did not provide the requested confirmation. In the present application under appeal to the extent that the Examiner can be viewed as having made a similar request for confirmation that examples within the scope of Applicants' claims could be found other than the specific examples provided in Applicant's specification, Applicants have provide extensive evidence that other species were found following Applicants' teaching.

In *In re Cook* the CCPA found claims not enabled saying:

Appellants having failed to establish the truthfulness of their assertions about the validity of their ranges when reasonably challenged to do so by the examiner, we hold that the Patent Office properly rejected the appealed claims. The decision of the board is affirmed. *In re Cook*, 58 C.C.P.A. 1049, 1056 (C.C.P.A. 1971) 169 USPQ 298

Applicants have established the truthfulness of their assertion by abundant un rebutted factual evidence. For these reasons the Examiner's rejection for lack of enablement should be reversed.

The Examiner has cited the Board's precedential decision *Ex parte Jackson* 217 U.S.P.Q. 804, 806 (1982) which is directed to a biotechnology invention in which the applicants discovered three bacteria strains which produced a new antibiotic. The appealed claims were directed to a process for producing the antibiotic by a new species, claimed generically by a created species name, having the ability to produce the antibiotic in a certain media. The Board in the decision states that the issue is:

whether a verbal description of a new species would enable one of ordinary skill in the relevant art to obtain strains of that species over and above the specific strains made available through deposit in one of the recognized culture depositories. 217 U.S.P.Q. 804, 806 (1982)

and

relates to the amount of experimentation required to find additional strains over and above the deposited cultures, as distinguished from the presumably routine experimentation involved in determining whether a given strain once isolated produces the desired antibiotic. 217 U.S.P.Q. 804, 807 (1982)

The policy reasons for requiring deposit in biotechnology inventions is that inventors "because of the particular area of technology involved, cannot sufficiently disclose by written word how to obtain the microorganism starting material from nature." 217 U.S.P.Q. 804, 807 (1982).

In *Ex parte Jackson* the Board held "Classification by [the inventor] of the three strains under consideration as variant strains of a new species adds nothing material to the disclosure. As recognized in essentially all microbiology textbooks, bacterial classification is to a very great extent arbitrary. " 217 U.S.P.Q. 804, 808 (1982).

As stated in the Brief the Board further stated in *Ex parte Jackson*: the problems of enablement of processes carried out by microorganisms were uniquely different from those involved in the field of chemistry generally. Thus, we are convinced that such recent cases as *In re Angstadt*, 537 F. 2d 498, 190 USPQ 214 (CCPA 1976) and *In re Geerdes*, 491 F. 2d 1260, 180 USPQ 789 (CCPA 1974) are inapposite to this case.



The experimentation involved in the ordinary chemical case, including the two cited directly above, usually arises in testing to establish whether a particular species within the generic claim language will be operable in the claimed process. As already indicated above, cases of the type before us are distinguished by the fact that the experimentation is associated with obtaining the species from nature before it can be tested.... [T]he degree of experimentation involved in locating new microorganisms apart from deposited cultures is undue in light of the enablement requirement of 35 U.S.C. 112. 217 U.S.P.Q. 804, 808 (1982).

Thus the Board quoting *In re Argoudelis*, 168 U.S.P.Q. 99 (1970) stated that in the field of the claimed invention in *Ex parte Jackson* a claimed genus created by the patent applicant was not enabled where a person of ordinary skill in the art did not know how to make other species that came within the scope of the claim but could only find them in nature by “an experimental screening program similar to the screening program followed in discovering the microorganisms in the first instance.” 217 U.S.P.Q. 804, 808 (1982). This does not satisfy the how to make requirement of 35 U.S.C. 112, first paragraph, since in the microorganism invention, in finding other species within the scope of the claim “the experimentation is associated with obtaining the species from nature before it can be tested.” 217 U.S.P.Q. 804, 808 (1982). The Board in *Ex parte Jackson* quotes from *In re Argoudes* 168 USPQ 99, 101 (1970) which states “a unique aspect of using microorganisms as starting materials is that a sufficient description of how to obtain the microorganism from nature cannot be given. “*Ex parte Jackson* 217 USPQ 804, 807 (1982). There is no teaching on how to make these species in the *Ex parte Jackson* application. The Board in *Ex parte Jackson* 217 U.S.Q. 804, 807 further quotes from *In re Argoudes* 168 USPQ 99, 102 (1970) stating :

If the microorganism involved were of very common occurrence, it might be found in a relatively short time, but if it were not of common occurrence, it might not be found for a very long time, if found at all. The microorganism involved here, of course, was not known and available to the workers in the art since it was newly discovered by appellants.

In contradistinction, in Applicants’ claimed inventions on appeal in the present application persons of ordinary skill in the art know how to make species

that come within the scope of the claims rejected as not enabled. The Poole 1988 Enablement Statement (See Brief Volume 3, page 6) states that species within the scope of Applicants' claims were not difficult to synthesize, that is, unlike in the microorganism situation of *Ex parte Jackson*, they were not difficult to find. The Examiner has not rebutted this in the Final Action or in the Examiner's Answer. In fact as stated in the Brief and above the Examiner's evidence and First to Fourth Enablement Statements support Applicants' position that their claims are enabled.. See Brief Volume 3, pages 2-6.

In particular, the Examiner's statement at page 8 of the Final Action, which is repeated in the Examiner's Answer in the sentence bridging page 23 and 24, states :

The Examiner does not deny that the instant application includes "all know principles of ceramic science", or that once a person of skill in the art knows of a specific type of composition which is superconducting at greater than or equal to 26K, such a person of skill in the art, using the techniques described in the application, which included all principles of ceramic fabrication known at the time the application was initially filed, can make the known superconductive compositions. (Emphasis in the original.)

This referred to as the Examiners' First Enablement Statement in Brief Volume 3, page 2. The Examiner in the Final Action dated 10/20/ 2005 at page 4 refers to a article by Schuller et al. which states in the passage from Schuller et al. quoted by the Examiner "[o]f course, 'enlightened' empirical searches either guided by chemical and materials intuition or systematic searches using well-defined strategies may prove to be fruitful. It is interesting to note that empirical searches in the oxides gave rise to many superconducting systems." This is referred to as the Schuller Enablement Statement. See Brief Volume 3, page 8. See the Affidavit of Newns submitted 04/12/2006 ¶ 18. The DST AFFIDAVITS (Brief Attachments AM, AN and AO) which describe what a person of skill in the art knew prior to Applicants' discovery upon which the systematic empirical study was based in view of Applicant's teaching. The Affidavit of News shows how this systematic empirical study is in principal the same as a systematic theoretical investigation when a well developed theoretical formalism exists. Thus

Applicant's claims are predictable within the meaning of 35 U.S.C. 112, first paragraph, and thus enabled.

Thus unlike the invention in Ex parte Jackson where there was no teaching on how to make examples of microorganisms, other than those explicitly described, that came within the scope of the claimed species of microorganism rejected as not enabled, in the present invention the Examiner's own evidence explicitly states "[o]f course, 'enlightened' empirical searches either guided by chemical and materials intuition or systematic searches using well-defined strategies may prove to be fruitful. It is interesting to note that empirical searches in the oxides gave rise to many superconducting systems." In regards to enablement the situation presented by the present invention is substantially different than the situation in Ex parte Jackson. In Ex parte Jackson a person of ordinary skill in the art would have to randomly search for other examples that occur in nature without guidance on how to do that search. In contradistinction, as stated by the article to Schuller "'enlightened' empirical searches either guided by chemical and materials intuition or systematic searches using well-defined strategies ... in the oxides gave rise to many superconducting systems." Moreover, Schuller states that such "'enlightened' empirical searches either guided by chemical and materials intuition or systematic searches using well-defined strategies may prove to be fruitful" to find other examples. Thus Schuller states that persons of ordinary skill in the art have found and know how to find other examples of high  $T_c$  materials that come within the scope of Applicants' claimed invention by techniques that they know. This was not the case in Ex parte Jackson. That is why the rejected claim was not enabled in Ex parte Jackson, but is enabled in the present application. This is why such other examples are "predictable" within the meaning of the enablement requirement of 35 U.S.C. 112 in the present application..

As argued in the Brief in regards to a rejection for insufficient disclosure under 35 USC 112 the CCPA in In re Fisher states that:

the issue thus presented is whether an inventor who is the first to achieve potency of greater than 1.0 for certain types of compositions, which potency was long desired because of its beneficial effects on humans, should be allowed to dominate *all* compositions having potencies greater than 1.0, thus including future compositions having potencies in excess of those obtainable from his teachings plus ordinary skill." 166 USPQ 18, 23-24 (emphasis in the original).

The CCPA goes on to say in *In re Fisher* that:

"It is apparent that such an inventor should be allowed to dominate the future patentable inventions of others where those inventions were based in some way on his teachings. Such improvements, while unobvious from his teachings, are still within his contribution, since the improvement was made possible by his work. It is equally apparent, however, that he must not be committed to achieve this dominance by claims which are insufficiently supported and hence, not in compliance with the first paragraph of 35 USC 112. That paragraph requires that the scope of the claims must bear a reasonable correlation to the scope of enablement provided by the specification to persons of ordinary skills in the art... In cases involving unpredictable factors, such as most chemical reactions... the scope of enablement obviously varies inversely with the degree of unpredictability of the factors involved." (166 USPQ 18, 24) (Emphasis added)

Applicants of the present invention have provided the first teaching that compositions, for example such as ceramics and more particularly, oxides, metal oxides and transition metal oxides, can form a superconductor having a critical temperature greater than or equal to 26°K, therefore, it "is apparent that such an [applicant] should be allowed to dominate the future patentable inventions of others when those inventions [are] based in some way on [Applicants] teaching" as stated by the CCPA *In re Fisher* supra. All known ceramic superconductors that have come to be known as the class of "high  $T_c$  superconductors" are based on Applicants' teaching.

The Court in *In re Fisher* clearly states that the later "improvements [of others], while unobvious from [a prior patent applicant's] teachings, are still within

[the prior patent applicant's] contribution, since the improvement was made possible by [the prior patent applicant's] work." Thus the Applicants of the present invention are entitled to a claim that includes within its scope what is not obvious from their teaching. The Examiner's rejections for lack of enablement appear to require that all species that come within the scope of Applicants' rejected claims be obvious from Applicants' teaching which is directly contrary to the holding of *In re Fisher*.

It is clear that when the statement of *In re Fisher* quoted above "while unobvious from [a prior patent applicant's] teachings" is juxtaposed against the statement later in the paragraph "[i]n cases involving unpredictable factors, such as most chemical reactions ... the scope of enablement obviously varies inversely with the degree of unpredictability of the factors involved" that "predictability" does not mean self-evident theoretical predictability. A species which is self-evidently theoretically predictable from a generic teaching would be obvious in view of that teaching and could not be a "patentable invention" in view of the prior generic teaching. The Examiner's reasons for rejecting Applicants' claims as not being enabled appear to be significantly based on the Examiner's statement from the Final Action repeated the sentence bridging page 6 and 7 of the Examiner's Answer that "[i]t should be noted that at the time the invention was made, the theoretical mechanism of superconductivity in these materials was not well understood." This apparent reliance is inconsistent with the holding of *In re Fisher* as noted in detail in the Brief. If according to *In re Fisher* a latter species that is not obvious can come within the scope of an earlier generic claim and be enabled by the teaching supporting that generic claim, a well understood theoretical mechanism is not necessary to support enablement of the generic claim. As argued in the Brief, which the Examiner has not rebutted, the term "predictable" as used in *In re Fisher* means determinable without undue experimentation following the teaching supporting the generic claim. The Examiner has presented no rebuttal to the argument in the Brief that the Examiner has not made out a prima facie case of lack of enablement since the Examiner

has not shown why a person of ordinary skill in the art cannot determine without undue experimentation following Applicants' teaching other species that come within the scope of Applicants' claims rejected for lack of enablement. Thus In re Fisher supports the enablement of these rejected claims.

Once Applicants published their discovery for which they received the 1987 Nobel Prize in Physics, it was obvious to try all materials that could be made without undue experimentation according to the general principals of ceramic science known at the time of Applicants' earliest filing date following Applicants' teaching to determine those species by techniques known at the time of Applicants' invention that have a  $T_c$  greater than or equal to  $26^\circ\text{K}$ . More specifically it would be obvious to try materials with the specific attributes in each of Applicants' claims and listed in the summary of the invention of the Brief. Thus in response to the Examiner's inquiry at the bottom of page 6 of the Examiner's Answer "In particular, the question arises: Will any layered perovskite material exhibit superconductivity?" it is clear that it is obvious to try any of these and there is no evidence that a person of skill in the art cannot make and test any of these species without undue experimentation. All layered perovskite materials do not have to work for Applicants' claims to be enabled." It is Applicants' position that the Examiner's question is not relevant to the issue of enablement. The correct inquiry is can species that come within the scope of Applicants' claims be found and tested without undue experimentation. Applicants have presented abundant evidence to show that such species can be found and tested without undue experimentation. The examiner has not rebutted that evidence. As argued above in In re Cooper the Examiner raised implied doubt that the applicant there did not respond to. The Examiner has not shown that such doubt exists in the present application. The Examiner has not shown that there are any perovskites that cannot be made following Applicants' teaching or that any perovskite can be determined to have or not have the high  $T_c$  property without undue experimentation. Moreover, it would be obvious to try any of them. Whether a particular perovskite has the high  $T_c$  property may be a nonobvious unexpected

result, but that does not mean that it is not enabled by Applicants teaching. Species that are obvious to try are species that can be made and tested by known principals, that is they are enabled, but such enabled species can have nonobvious unexpected results.

Serendipity does not establish nonenablement but is an unexpected result establishing nonobviousness. Such a discovery although not obvious is enabled by applicants' teaching. A serendipitous discovery is an unexpected result, which does not establish lack of enablement, but that discovery of such species may entitle the discoverer to a patent on that specie due to unexpected results as contemplated by *In re Fisher*, supra.

In *Ex parte Jackson* it was not know how to make microorganisms and it was not obvious where to look for other examples within the described microorganism species. In the present application it is obvious to try to make any species that can be made according to know principal of ceramic science and it is know how to make them and how to test them.

That a later discovered species has an unexpected result does not render a generic claim, within which scope the species comes, not enabled when that species is made according to the teaching supporting the generic claim. Something that is obvious to try is something that can be made and is thus enabled.

An unexpected result is a consequence of an underlying scientific principle. The unexpected result is not made by the inventor so that when 112 refers to "make and use," it is not referring to the result – here a  $T_c$  greater than or equal to 26 deg K. An inventor cannot make a law of nature. An inventor can discover that a species has this property and a use for it. Applicants of the present Application have taught how to make and test and thereby find species of high  $T_c$  materials without undue experimentation.

The Examiner has not made out a prima facie case of lack of enablement since the Examiner has given no reason to doubt that persons of ordinary skill in the art can make and use species other than those disclosed by Applicants, within the meaning of the enablement requirement,

The CCPA dealt with an issue related to the enablement issue in the present Application in *In re Bowen* in which:

The invention relates to the removal of agglomerates of delusterants and other finely-divided solid powders, referred to as "pigment," from polymers by filtration at the optimum time.

*In re Bowen*, 492 F.2d 859 (C.C.P.A. 1974) 492 F.2d 859; 1974 CCPA LEXIS 191; 181 U.S.P.Q. (BNA) 48, 49

In *In re Bowen* 181 U.S.P.Q. 48, 49 quoting from the appealed decision the CCPA states that claims were rejected by the USPTO as not enabled "on the grounds that the term 'polymerizable material' is not disclosed in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains to make and use the same (35 U.S.C. 112, paragraph one)." The CCPA reversed this rejection pointing out:

And, on reconsideration, the board, apparently agreeing with appellant's observation "that there is nothing of record to indicate that one skilled in the art could not use appellant's process in polymerizing any polymer," stated that:

However, neither is there any evidence that polymerizable materials other than nylon intermediates will be operable in the claimed process. In our opinion, the situation here is readily distinguishable from the facts of the *Burke*, [25 CCPA 795, 93 F.2d 50, 36 USPQ 64 (1937),] *Roberts*, [113 USPQ 205 (Pat. Off. Bd. App., 1956),] *Donahey*, [126 USPQ 61 (Pat. Off. Bd. App., 1959),] and *Marzocchi* [, 58 CCPA 1069, 439 F.2d 220, 169 USPQ 367 (1971)] cases cited by the appellant. The properties of "polymerizable materials" can vary over a wide range, rendering it quite uncertain as to whether or not the claimed process is broadly applicable to all such materials. In the absence of such a



teaching, we must agree with the examiner's rejection in this instance.

In re Bowen, 492 F.2d 859, 860-861 (C.C.P.A. 1974)  
181 U.S.P.Q. (BNA) 48, 49

The CCPA commenting on this states:

It is clear from the decision of the board that the unpredictability which it noted was in the admittedly chemical fact that the "properties of 'polymerizable materials' can vary over a wide range," but no reasons were given to appellant by the Patent Office for the alleged failure - or at least uncertainty - of the class of "polymerizable materials" to work in the claimed process to controvert the statement in appellant's application that his invention, in its broader aspects, is applicable to other polymers. See *In re Nguyen Dinh-Nguyen*, Patent Appeal No. 9134, decided concurrently herewith. It is clear that even in cases involving the unpredictable world of chemistry such reasons are required. As we stated in *In re Marzocchi*, 58 CCPA at 1073, 439 F.2d at 223-24, 169 USPQ at 369-70:

In re Bowen, 492 F.2d 859, 862 (C.C.P.A. 1974)  
181 U.S.P.Q. (BNA) 48, 50-51

In the present Application the Examiner has provided not reason for why species that come within the scope of the claims rejected for lack of enablement cannot be made and used. In the concurrent decision referred to by the CCPA *In re Nguyen Dinh-Nguyen*, 181 U.S.P.Q. 46 the claimed invention was described by the CCPA as follows:

The application is directed to the improvement of the process of exchanging the heavy isotope deuterium for hydrogen in organic compounds by the use of deuterium peroxide as a promoter. It is stated in the specification that the presence of this promoter permits the replacement of hydrogen in a "great many organic compounds including compounds of high molecular weight" whereas the earlier methods were only effective with compounds of low molecular weight.

In re Dinh-Nguyen, 492 F.2d 856 (C.C.P.A. 1974), 181 U.S.P.Q.  
46

The CCPA states that "The examiner's rejection under 35 USC 112 was based on the conclusion that the specification failed to 'effectively support the scope' of the claims. It was his position that the claims encompassed the use of a broad range of organic compounds in the deuteration process, many of which might 'properly be expected to undergo interfering reactions.'" In re Dinh-Nguyen, 492 F.2d 856 (C.C.P.A. 1974), 181 U.S.P.Q. 46

The CCPA disagreed stating:

Accordingly, the touchstone is that which is claimed. Deuteration by the general method recited in the preamble of appellants' claims is a known process. Although, as acknowledged in appellants' specification, the applicability of that process was limited to certain classes of organic compounds, the basic procedure was a part of the prior art. Appellants' contribution lies in extending the effectiveness of the process by the addition of a particular promoter. The process may still be characterized as "deuterating an organic compound containing hydrogen atoms replaceable by deuteration," even though the scope of deuterable compounds has been widened. Thus the accompanying disclosure in the specification need only be sufficient to enable those skilled in the art to achieve deuteration of potentially deuterable compounds in the presence of deuterium peroxide.

Looking to appellants' specification, we find not only a general discussion of the procedure to be followed but also three specific examples outlining the preparation of the Adams catalyst, the alkali catalyst, and the promoter as well as the exchange reaction with stearic acid, camphor, and anthracene. All the "deuteratable" compounds are of high molecular weight and all are deuterated by appellants' improved process. The obvious general applicability of the procedure so demonstrated fully satisfies the enabling disclosure requirement of 35 USC 112.

In re Dinh-Nguyen, 492 F.2d 856, 858 (C.C.P.A. 1974), 181 U.S.P.Q. 46,47

Similarly in present Application the basic process to make compositions that come within the scope of Applicants' claims is known. The present Applicants' contribution is discovering that ceramic materials are high  $T_c$  superconductors. The present Applicants' specification provided a general discussion of how to make these materials by known processes and a number of

specific examples. As stated by the CCPA above “The obvious general applicability of the procedure [to make other species that come within the scope of Applicants’ claims] so demonstrated fully satisfies the enabling disclosure requirement of 35 USC 112.”

The CCPA also confirms in the passage quoted above that all species that come within the scope of Applicants’ claims do not have to be disclosed in advance when the court states: “Thus the accompanying disclosure in the specification need only be sufficient to enable those skilled in the art to achieve deuteration of **potentially** deuterable compounds in the presence of deuterium peroxide.” (Emphasis added.) Correspondingly, the present Applicants’ “specification need only be sufficient to enable those skilled in the art to achieve ... **potentially** ... compounds [having a Tc greater than or equal to 26K ]” for their claims to be enabled. It is clear that by using “potentially” those compounds can be determined later and do not have to be disclosed in the specification for the claims to be enabled.

Returning to the CCPA decision in *In re Bowen* the court states:

In the field of chemistry generally, there may be times when the well-known unpredictability of chemical reactions will alone be enough to create a reasonable doubt as to the accuracy of a particular broad statement put forward as enabling support for a claim. This will especially be the case where the statement is, on its face, contrary to generally accepted scientific principles. Most often, additional factors, such as the teachings in pertinent references, will be available to substantiate any doubts that the asserted scope of objective enablement is in fact commensurate with the scope of protection sought and to support any demands based thereon for proof. In any event, it is incumbent upon the Patent Office, whenever a rejection on this basis is made, to explain why it doubts the truth or accuracy of any statement in a supporting disclosure and to back up assertions of its own with acceptable evidence or reasoning which is inconsistent with the contested statement. Otherwise, there would be no need for the applicant to go to the trouble and expense of supporting his presumptively accurate disclosure.

In re Bowen, 492 F.2d 859, 863 (C.C.P.A. 1974), 492 F.2d 859; 1974 CCPA LEXIS 191; 181 U.S.P.Q. (BNA) 51

The Examiner has referred to no “statement [of the Applicants that] is, on its face, contrary to generally accepted scientific principles.” The Examiner has identified no “references, to substantiate any doubts that the asserted scope of objective enablement is in fact commensurate with the scope of protection sought” by Applicants. Notwithstanding Applicants have submitted extensive evidentiary support for the enablement of the rejected claims that has not been rebutted by the Examiner. As argued in the Brief the article of Schuller provide by the Examiner in support of the Examiner’s rejection in fact supports Applicants’ assertion that their claims are enabled. Also as argued in the Brief the internet article submitted by the Examiner containing a statement of inventor Georg Bednorz, when properly understood ,does not support the Examiner’s assertion of lack of enablement.

The CCPA concluded in In re Bowen

Accordingly, there appears to be no basis for the non-enablement rejection on the theory that claims read on undisclosed polymers. While the claims literally comprehend numerous polymers in addition to the one specifically described in appellant's specification, nylon 66, no persuasive reason has been given by the Patent Office why the specification does not realistically enable one skilled in the art to practice the invention as broadly as it is claimed.

In re Bowen, 492 F.2d 859, 863 (C.C.P.A. 1974), 492 F.2d 859; 1974 CCPA LEXIS 191; 181 U.S.P.Q. (BNA) 51-52

From this passage it is clear that the CCPA found that in In re Bowen **one** example, nylon 66, was sufficient to enable a claim directed to the **genus**, a “polymer,” which includes many species not disclosed in the Bowen specification. Thus in a chemical application a single disclosed species enabled a genus dominant to many undisclosed species. Correspondingly, in the present Application “[w]hile the claims literally comprehend numerous [materials] in addition to the [ones] specifically described in [Applicants’] specification no persuasive reason has been given by the Patent Office why the specification does not realistically enable one skilled in the art to practice the invention as

broadly as it is claimed.”

The CCPA in *In re Bowen* further states.

Perhaps appellant's specific illustrative disclosure of an embodiment of his invention is limited to polymerizable materials "that are in fact fiber-forming polymers." However, that is no basis for a lack of enablement rejection. While appellant's pre-filtering invention undoubtedly is for the stated purpose of removing pigment agglomerates from fiber-forming polymers, appellant's statement of utility does not thereby mean that he is unable to claim his filtering process more broadly. The first paragraph of § 112 requires only that the specification enable any person skilled in the art to which the invention pertains to make and use the invention. There has been no contention by the Patent Office that any person skilled in the art, if he wanted to filter a polymer which was not fiber-forming, would have any trouble doing so.

*In re Bowen*, 492 F.2d 859, 864 (C.C.P.A. 1974), 492 F.2d 859; 1974 CCPA LEXIS 191; 181 U.S.P.Q. (BNA) 52

Following this rational, in the present Application, if it is true as the Examiner states that Applicants' specific embodiments are directed to flowing a superconducting current in "compositions comprising a transition metal oxide containing at least a) an alkaline earth element or Group IIA element and b) a rare-earth element or Group IIIB element" (having a  $T_c$  greater than or equal to 26 K) (See bottom of page 5 of the Examiner's answer.) this "is no basis for a lack of enablement rejection." Following the CCPA "[t]he first paragraph of § 112 requires only that the specification enable any person skilled in the art to which the invention pertains to make and use the invention. There has been no contention by the Patent Office that any person skilled in the art, if he wanted to [make other species that come with the scope of Applicants' rejected claims] ..., would have any trouble doing so." Thus the Examiner has not made a prima facie case of lack of enablement of the rejected claims.

The Examiner states at page 4 of the Final Office Action and at the bottom of page 5 of the Examiner's Answer that the claims rejected for lack of enablement have been rejected:

because the specification, while being enabling for compositions comprising a transition metal oxide containing at least a) an alkaline earth element or Group IIA element and b) a rare-earth element or Group IIIB element, does not reasonably provide enablement for the invention as claimed. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

In this statement the Examiner is not giving a reason for why a person of ordinary skill in the art cannot make species that come within the scope of the rejected claims. This comment sounds more like the Examiner is of the view that Applicants are claiming their invention too broadly. Such a comment is at times interpreted to be a reason for rejection under 35 U.S.C. 112, second paragraph.

In *In re Fuetterer* the CCPA considered a rejection for "undue breadth" under 35 U.S.C. 112, second paragraph. The CCPA's rationale for reversing the rejection may be applied to the present rejection for lack of enablement. The court stated:

The rejection of the claims for "undue breadth" places particular emphasis on (1) an alleged "undue burden upon the public to *determine* what salts are suitable for obtaining the desired results" (emphasis ours), and (2) an alleged "undue [amount of] experimentation" required of those skilled in the art to determine those salts possessing the "function asserted" by the instant claims. The undue breadth rejection phase of the instant case appears in the following posture. Appellant has described his invention as comprehending the use therein of any inorganic salt capable of performing a specific function in a specific combination and he has disclosed specifically four such salts which are capable of performing this function. The examiner and the board, believing that not all inorganic salts are capable of performing this function and that one skilled in the art would not know offhand which inorganic salts are capable of so functioning, have rejected the claims as "unduly broad."

It is clear that the instant claims do not comprehend a class of inorganic salts of any greater breadth than is comprehended by the invention description. n12 It is equally clear from this description and appellant's brief that, in the words of the second paragraph of

section 112, "applicant regards as his invention" the combination with his other tread ingredients of any inorganic salt capable of "maintaining the carbohydrate, the protein, or mixture thereof, in colloidal suspension \* \* \*." It is exactly this combination which appellant has particularly pointed out and distinctly claimed in compliance with the second paragraph of section 112. If, therefore, as the examiner alleges, many an "inorganic salt \* \* \*" would not be operative for appellant's purpose," this criticism bears only on the sufficiency of the invention description. But its adequacy under the first paragraph of section 112 has not been questioned.

In re Fuetterer, 50 C.C.P.A. 1453, 1462 (C.C.P.A. 1963)  
138 U.S.P.Q. (BNA) 217, 222-223.

The CCPA further states:

We find the arguments of the board and the examiner relating to experimentation necessary to determine the suitability of undisclosed salts to operate in appellant's claimed combination beside the point. Appellant's invention is the combination claimed and not the discovery that certain inorganic salts have colloid suspending properties. We see nothing in patent law which requires appellant to discover which of all those salts have such properties and which will function properly in his combination. The invention description clearly indicates that any inorganic salt which has such properties is usable in his combination. If others in the future discover what inorganic salts additional to those enumerated do have such properties, it is clear appellant will have no control over them per se, and equally clear his claims should not be so restricted that they can be avoided merely by using some inorganic salt not named by appellant in his disclosure. **The only "undue burden" which is apparent to us in the instant case is that which the Patent Office has attempted to place on the appellant.** The Patent Office would require him to do research on the "literally thousands" of inorganic salts and determine which of these are suitable for incorporation into his claimed combination, apparently forgetting that he has not invented, and is not claiming, colloid suspending agents but tire tread stock composed of a combination of rubber and other ingredients.

We are not persuaded that our conclusion on this point is wrong by decisions of this and other courts relating to the sufficiency of invention disclosures in cases wherein the applicant is claiming chemical compounds per se.  
(Emphasis added.)

In rejecting Applicants' claims as not enabled the Examiner is subjecting Applicants to "undue burden" referred to by the CCPA in the passage above. The Examiner "would require [Applicants] to do research on the 'literally thousands' of [compositions made according to Applicants' teaching] and determine which of these are suitable for incorporation into his claimed combination [i.e., an apparatus, device, structure etc.], apparently forgetting that [Applicants have] not invented, and is not claiming, [a composition or matter] but [an apparatus, device, structure etc.] composed of a combination of [a material having a  $T_c$  greater than or equal to 26K] and other [elements, e.g., a source of current, current flowing, etc.]" The Board has made a similar statement in *Ex parte Jackson*.

As stated by Applicants at page 91 of Brief Volume 1 the Board in *Ex parte Jackson* states at 217 USPQ 804, 808 "[t]he problem of enablement of processes carried out by microorganisms were uniquely different from the field of chemistry generally."

As stated by Applicants at page 91 of this Volume 1:

The Board in *Ex parte Jackson* further states at 217 USPQ 808 "The problem of enablement of processes carried out by microorganisms were uniquely different from the field of chemistry generally. Thus, we are convinced that such recent cases as *In re Angstadt* 537 F.2d 498, 190 USPQ 214 (CCPA 1976) and *In re Geerdes* 491 F.2d 1260, 180 USPQ 789 (CCPA 1974) are in apposite to this case." Therefore, since the present application is not directed to biotechnology or microorganism invention, the decision of *Ex parte Jackson* does not apply, but *In re Angstadt* and *In re Geerdes* do apply.

The Board here states that enablement is applied relative to the field or the claimed invention. Applicants' are not claiming a composition of matter but a device, apparatus, structure, etc. incorporating a material with a  $T_c$  greater than or equal to 26 K as an element. A claim to a chemical composition includes



within its scope all uses of that composition. Applicants' claims are narrower in scope being limited to device, apparatus, structure, etc. wherein the material element of the claim must satisfy the limitations of the claim as a whole.

The CCPA in *In re Goffe*, citing *In re Fuetterer* states in reversing a rejection for lack of enablement states:

For all practical purposes, the board would limit appellant to claims involving the specific materials disclosed in the examples, so that a competitor seeking to avoid infringing the claims would merely have to follow the disclosure in the subsequently-issued patent to find a substitute. However, to provide effective incentives, claims must adequately protect inventors. To demand that the first to disclose shall limit his claims to what he has found will work or to materials which meet the guidelines specified for "preferred" materials in a process such as the one herein involved would not serve the constitutional purpose of promoting progress in the useful arts. See *In re Fuetterer*, 50 CCPA 1453, 1462, 319 F.2d 259, 265, 138 USPQ 217, 223 (1963).

*In re Goffe*, 542 F.2d 564, 567 (C.C.P.A. 1976)  
191 U.S.P.Q. (BNA) 429

Following *In re Goffe* Applicants were the first to discover materials that are superconductors having a  $T_c$  greater than or equal to 26 K. They were awarded the 1987 Nobel Prize for this work. "To demand that the [they as the] first to disclose [high  $T_c$  superconductors] shall limit [their] claims to what [they have] found will work or to materials which meet the guidelines specified for "preferred" materials in [an apparatus, device, structure, etc.] such as the one herein involved would not serve the constitutional purpose of promoting progress in the useful arts." As stated the Examiner has not made out a prima facie case of lack of enablement for the claims rejected as not enabled. Applicants respectfully request the Board to reverse these rejections since not to do so "would not serve the constitutional purpose of promoting progress in the useful arts."

***MISCELANEOUS***

The Appendix to this Reply lists typographical errors in the Brief. The corrected text is listed with deletions in bold between bold double brackets, i.e, **[[text]]** , and additions in bold underlined , i.e., **text**.

**CONCLUSION**

Applicant requests the Board to reverse the rejection of claims 1-64, 66-72, 84, 85, 88-96, 100-102, 109-112, 115-122, 126-134, 139, 141-143, 146-149, 153-155, 162-166, 182-184, 187, 188, 192-195, 198-212, 217-219, 222, 223, 227-230, 232-234, 237-240, 244-246, 253-257, 268, 273-275, 278, 279, 283-286, 289-295, 302, 303, 308-310, 313, 314, 318-329, 331-334, 337-345, 347-357, 359-374, 376, 382, 383, 389, 394, 395, 402, 407, 408, 414-419, 421-424, 426-501, 508-510 and 515-543 as not enabled under 35 U.S.C. 112, first paragraph.

In view of the arguments herein Applicants respectfully request that the Board grant Applicants' claim of priority to the Priority Document or to enter into the record a statement that Applicants' claim of priority does not have to be decided on to decide the issues raised by this appeal.

Please charge any fee necessary to enter this paper and any previous paper to deposit account 09-0468.

Respectfully submitted,

/Daniel P Morris/  
Dr. Daniel P. Morris, Esq.  
Reg. No. 32,053  
(914) 945-3217

IBM CORPORATION  
Intellectual Property Law Dept.  
P.O. Box 218  
Yorktown Heights, New York 10598

**APPENDIX TO REPLY**  
**Correction to**  
**Typographical Errors in the Brief**

**In the Brief Volume 1 at page 45, lines 7-9,**  
**make the following change.**

Thus all chemical reactions are **not** unpredictable. Applicants' evidence shows that the chemistry involved in formation of high T<sub>c</sub> materials does not have to be understood to fabricate them which is one reason for why species are readily determinable.

**In the Brief Volume 1 at page 50, line 3-4 from the bottom,**  
**make the following change**

In a precedential decision **of** the Board of Patent Appeals and Interferences in Ex parte Jackson 217 USPQ 804, 806 the Board states...

**In the Brief Volume 1 at page 55 in the last sentence**  
**make the following change.**

This will leave the record clear that Applicants have not conceded to the Examiner's objection to **[[a]]** Applicants' claim of priority which will be available to Applicants' for decision, if needed, at a future date.

**In the Brief Volume 1 at page 56, lines 14-15,**  
**make the following change.**

Applicants respectfully disagree with the Examiner that support is not found in **[[that]]** the priority document.

**In the Brief Volume 1 at page 59, lines 7-8,**  
**make the following change.**

The documents in Brief Attachment AS support **[[a]]**Applicants' position that the priority document teaches nonstoichiometric amounts of oxygen.

**In the Brief Volume 1 at page 71, lines 5-8,**  
**make the following change.**

The Examiner provides no evidence or argument to support the application, to the present invention, of the Examiner's statement that "[t]he amount and type of examples necessary to support broad claims increases as the predictability of the art decreases" to **[[a]]**Applicants' rejected claims. **[[']]**

**In the Brief Volume 1 at page 73, last paragraph,**  
**make the following change.**

The claims under appeal In re Fisher are directed to increasing the potency of substances containing ACTH hormones for injection into human beings. In

regards to the rejection for insufficient disclosure under 35 USC 112 the CCPA states that:

"the issue thus presented is whether an inventor **[[with]] who is** the first to achieve potency of greater than 1.0 for certain types of compositions, which potency was long desired because of its beneficial effects on humans, should be allowed to dominate *all* compositions having potencies greater than 1.0, thus including future compositions having potencies in excess of those obtainable from his teachings plus ordinary skill." 166 USPQ 18, 23-24 (emphasis in the original).

**In the Brief Volume 1 at page 74, lines 5-8,**  
**make the following change.**

Applicants' documentary, declaration and affidavit evidence has shown that examples of high  $T_c$  materials not specifically identified in Applicants' specification can be determined or made with routine experimentation and thus those examples are predictable from Applicants' teaching.

**In the Brief Volume 1 at page 75, lines 4-6,**  
**make the following change.**

Thus later **[[discussed]] discovered** species do not have to be foreseeable from Applicants' teaching to be enabled by Applicants' teaching since they were enabled by Applicants' teaching.

**In the Brief Volume 1 at page 75, lines 12-17,**  
**make the following change.**

**According to [T]**the affidavits of Mitzi (Brief Attachment AH), Dinger (Brief Attachment AG), Tsuei (Brief Attachment AJ), Shaw (Brief Attachment AK), Duncombe (Brief Attachment AL), The DST AFFIDAVITS ¶ 23 (Brief Attachments AM, AN and AO) and the book of Poole 1988 **[book]** (Brief Attachment AF and AW) it is straight forward to use the general principles of ceramic science to make high  $T_c$  superconductors following Applicants' teaching.

**In the Brief Volume 1 at page 77, last line,**  
**make the following change.**

The CCPA further states in In re Fisher in regards to later inventions of others:

**In the Brief Volume 1 at page 83, lines 9-12,**  
**make the following change.**

Dr. Newns states at paragraph 9 "Moreover, that a theoretical computation is a **[ ]**theoretical experiment**[ ]** is in the conceptual sense not different than a physical experiment."

**In the Brief Volume 1 at page 84, lines 4-8 from the bottom,**  
**make the following change.**

As described in detail above it is clear that the reason for why the CCPA in In re Fisher did not find the claims under appeal patentable was that the applicant did not teach how to make ACTH with anything but 39 amino acids and there was no

evidence in the record that a person of skill in the art knew **[[haw]] how** to make ACTH with anything but 39 amino acids.

**In the Brief Volume 1 at page 85, lines 14-18,**  
**make the following change.**

Since skilled artisans can fabricate samples without knowing the “subtle physiochemical process involved” and without a detailed theory, this art is predictable. The statement from In re Fisher as quoted above that “[i] **[[ in]]** cases involving unpredictable factors such as most chemical reactions” explicitly does not state that all chemical reactions are unpredictable.

**In the Brief Volume 1 at page 89, lines 1- 4,**  
**make the following change.**

The CCPA in In re Hogan 194 U.S.P.Q. (BNA) 527 states that the later state of the art is useable neither to establish enablement nor to establish lack or enablement, but is usable to establish what the state **[[of the state]]** of the art was at the time of filing of a patent application.

**In the Brief Volume 1 at page 94**  
**make the following change.**

The Brief at page 94 refers to “Ex parte Chen, an unpublished decision reported at 61 USPQ 1025, 1028” this should state “Ex parte Chen, an unpublished decision reported at 61 USPQ **2d** 1025, 1028 **(2000)**.”



**In the Brief Volume 1 at page 95, lines 8 -11,**  
**make the following change.**

Thus, that Applicants' specification describes examples that either do not show a  $T_c$  greater than or equal to ~~[[7.]]~~26 K or examples that have phases with and without a  $T_c$  greater than or equal to 26 K does not mean that they have not enabled their genus claims.

**In the Brief Volume 1 at page 100, last 5 lines,**  
**make the following change.**

For the reasons given herein, it is Applicants' position that under In re Fisher and the other decisions referred to herein Applicants' claims are enabled and Applicants respectfully request the ~~[[Examiner]]~~ **Board** to ~~[[withdraw]]~~ **reverse** the rejection of Applicants' claims under 35 USC 112, first paragraph, for lack of enablement.

**In the Brief Volume 1 at page 109, lines 13-17,**  
**make the following change.**

Since Applicants' claims are directed to **an** apparatus ~~[[of]]~~ using compositions, Applicants' claims read on only those layered perovskite materials which exhibit superconductivity with a  $T_c \geq 26K$  and do not read on an apparatus us~~[[e]]~~**ing** ~~[[of ]]~~ compositions which are not superconductive. Thus the Examiner's queries ~~[[is]]~~ **are** not relevant to Applicants' claims.

**In the Brief Volume 1 at page 112, last 2 lines,  
make the following change.**

**As stated above the** Brenner v. Mason case has nothing to do with §112 enablement.

**In the Brief Volume 1 at page 112, line 4 from the bottom,  
make the following change.**

The Examiner further states on pages 8-9 **of the Office Action dated 07/28/2004:**

**In the Brief Volume 1 at page 117, lines 2-3,  
make the following change.**

**As agrued above [[T]]** the present specification and priority document (Brief Attachment AE) are not limited to this formula.

**In the Brief Volume 3 at page 12, lines 6-8  
make the following change.**

The Examiner has provided no reason to doubt that a person of skill in the art as of Applicants earliest priority date can not practice any of Applicants' claims rejected as not enabled.

**In the Brief Volume 3 at page 59, lines 15-16,**  
**make the following change.**

The Examiner has given no specific reasons for rejecting this claim as not enabled **other than the comments at page 9 of the Office Action dated 07/28/2004 which is commented on in Brief Volume 1, page 116 and 118.**

**In the Brief Volume 3 at page 155, lines 14-15,**  
**make the following change.**

The Examiner has given no specific reasons for rejecting this claim as not enabled **other than the comments at page 9 of the Office Action dated 07/28/2004 which is commented on in Brief Volume 1, page 116 and 118.**

**In the Brief Volume 3 at page 169, lines 18-19,**  
**make the following change.**

The Examiner has given no specific reasons for rejecting this claim as not enabled **other than the comments at page 9 of the Office Action dated 07/28/2004 which is commented on in Brief Volume 1, page 116 and 118.**